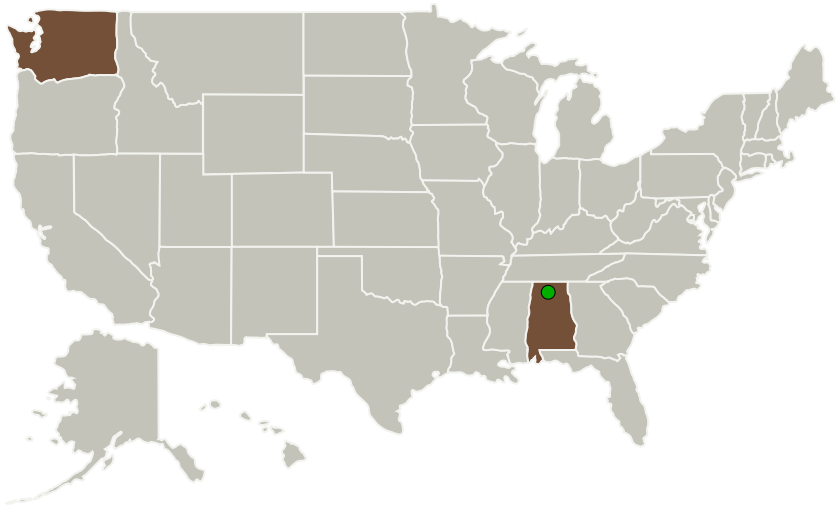
ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase II

Completed Technology Project (2017 - 2019)

Project Introduction

A key goal of the Human Exploration and Operations Mission Directorate (HEOMD) from 2012 is to utilize the ISS for developing the systems and protocols necessary to humans to venture beyond low Earth orbit for extended durations, and with the push from Congress in 2015 to build a deep space habitat for a Mars mission by 2018, the goals of HEOMD are increasingly important to meet. The ERASMUS technology integrates a plastics recycler, dry heat sterilizer, and 3D printer to create a system that accepts previously-used plastic waste and parts, sterilizes these pre-used materials, recycles them into food-grade and medical-grade 3D printer filament, and 3D prints new utensils and implements. This effort intends to minimize the requirements for initial supply as well as providing a method to make new parts on-demand as-needed. The ERASMUS Phase II effort focuses on the research and development of the ERASMUS process, sterilizing, recycling, and printing, as well as on a design and print effort, developing medical and food-contact devices.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Tethers Unlimited Inc	Lead Organization	Industry	
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Washington

Project Transitions

April 2017: Project Start

July 2019: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140926)*

Images

Examples of medical devices and utensils that have been 3-D printed on the dedicated ERASMUS printer.

Briefing Chart Image
ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase II Briefing Chart Image
(https://techport.nasa.gov/image/130626)

Final Summary Chart Image
ERASMUS: Food Contact Safe Plastics Recycler and 3D Printer System, Phase II
(https://techport.nasa.gov/image/131578)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Tethers Unlimited Inc

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

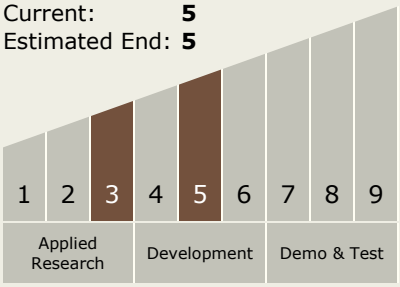
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Jesse I Cushing

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System